

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 **Claim 1 (original):** A wide band modulation PLL,
2 comprising:
3 a PLL part, including:
4 a voltage controlled oscillator;
5 a frequency divider that divides a frequency of
6 an output signal of the voltage controlled oscillator;
7 a phase comparator that outputs a signal based on
8 a phase difference between a reference signal and the
9 output signal of the frequency divider; and
10 a loop filter that outputs an output to the
11 voltage controlled oscillator so as to average the output
12 of the phase comparator;
13 a first modulation input part that inputs a first
14 modulation signal to the voltage controlled oscillator
15 based on inputted modulation data for modulating; and
16 a second modulation input part that inputs a second
17 modulation signal to a position different from the voltage
18 controlled oscillator in the PLL part based on the
19 modulation data,
20 wherein the voltage controlled oscillator includes a
21 first control terminal to which the first modulation signal
22 is inputted and a second control terminal to which a signal

23 based on the second modulation signal is inputted; and
24 wherein the first modulation input part has a
25 modulation sensitivity calculation unit that calculates a
26 first modulation sensitivity in the first control terminal
27 and a modulation factor adjustment unit that adjusts a
28 modulation factor of the modulation data based on the
29 calculated first modulation sensitivity and outputs the
30 first modulation signal.

1 **Claim 2 (original):** The wide band modulation PLL as
2 set forth in claim 1, wherein the modulation sensitivity
3 calculation unit has a modulation sensitivity calculation
4 part that measures a signal inputted to the second control
5 terminal, that calculates a second modulation sensitivity
6 in the second control terminal, that measures a value
7 indicating a ratio between the second modulation
8 sensitivity and the first modulation sensitivity, and that
9 calculates the first modulation sensitivity based on the
10 calculated second modulation sensitivity.

1 **Claim 3 (currently amended):** The wide band modulation
2 PLL as set forth in claim 1 ~~or 2~~, wherein the first
3 modulation input part has an A/D converter that makes
4 digital conversion of a signal inputted to the second
5 control terminal of the voltage controlled oscillator, the
6 modulation sensitivity calculation unit, the modulation

7 factor adjustment unit, and a D/A converter that makes
8 analog conversion of an output of the modulation factor
9 adjustment unit and that outputs the output to the first
10 control terminal.

1 **Claim 4 (currently amended):** The wide band modulation
2 PLL as set forth in ~~any one of claims 1 and 2~~claim 1,
3 wherein the first modulation input part includes an A/D
4 converter that makes digital conversion of a signal
5 inputted to the second control terminal of the voltage
6 controlled oscillator, the modulation sensitivity
7 calculation unit, and the modulation factor adjustment
8 unit;

9 wherein the modulation factor adjustment unit outputs
10 a digital signal to the first control terminal; and

11 wherein the voltage controlled oscillator changes a
12 frequency based on the digital signal inputted to the first
13 control terminal.

1 **Claim 5 (currently amended):** The wide band modulation
2 PLL as set forth in any ~~one of claims 1 through 4~~claim 1,
3 wherein the second modulation input part has a frequency
4 dividing ratio generation unit that controls a frequency
5 dividing ratio of the frequency divider based on carrier
6 frequency data and the modulation data.

1 **Claim 6 (currently amended):** The wide band modulation
2 PLL as set forth in ~~any one of claims 1 through 4~~claim 1,
3 wherein the second modulation input part has a direct
4 digital synthesizer that generates a modulation signal
5 based on carrier frequency data and the modulation data and
6 that outputs the modulation signal to the phase comparator.

1 **Claim 7 (currently amended):** The wide band modulation
2 PLL as set forth in ~~any one of claims 1 through 6~~claim 1,
3 wherein the first modulation input part calculates the
4 first modulation sensitivity, adjusts a modulation factor
5 and outputs the first modulation signal at the time of an
6 activation of the wide band modulation PLL and every
7 predetermined period is elapsed after the activation.

1 **Claim 8 (original):** The wireless terminal apparatus
2 incorporating the wide band modulation PLL according to any
3 one of claims 1 through 7.

1 **Claim 9 (original):** A modulation factor adjustment
2 method of a wide band modulation PLL comprising a PLL part
3 including a voltage controlled oscillator, a frequency
4 divider for dividing a frequency of an output signal of the
5 voltage controlled oscillator, a phase comparator for
6 outputting a signal according to a phase difference between
7 a reference signal and an output signal of the frequency

divider, and a loop filter for averaging an output of the phase comparator and outputting the output to the voltage controlled oscillator, the method comprising:

inputting a first modulation signal to a first control terminal of the voltage controlled oscillator for modulating;

inputting a second modulation signal to a position different from the voltage controlled oscillator in the PLL part based on the PLL by inputting carrier frequency data;

calculating a first modulation sensitivity in the first control terminal of the voltage controlled oscillator, and

adjusting a modulation factor of the first modulation signal based on the calculated first modulation sensitivity.

Claim 10 (original): The modulation factor adjustment method of a wide band modulation PLL as set forth in claim 9, wherein the step of calculating the first modulation sensitivity comprises the steps of:

measuring an input voltage inputted to a second control terminal being different from the first control terminal in the voltage controlled oscillator based on the second modulation signal;

calculating a second modulation sensitivity in the second control terminal; and

11 measuring a value indicating a ratio between the
12 second modulation sensitivity and the first modulation
13 sensitivity, and calculating the first modulation
14 sensitivity based on the calculated second modulation
15 sensitivity.